

**AMENDMENTS TO THE CLAIMS**

**This listing of claims will replace all prior versions and listings of claims in the application:**

**LISTING OF CLAIMS:**

1. (currently amended): A multichannel wavelength-division multiplex fiber optic transmission system, comprising:

an optical transmitter; and

an optical receiver connected to the optical transmitter by an optical line, the line comprising:

at least one optical fiber, and

at least one set of channel regenerators,

wherein each one of the set of channel regenerators regenerates, by compensating for a distortion of a signal, only a predetermined respective group of channels, each respective group forming a non-overlapping subset of a set of channels to be regenerated, and each channel of the groups is predetermined based on channel wavelength, and

wherein each channel regenerator is positioned at a predetermined distance on the optical line from other channel regenerators from said at least one set of channel regenerators and said each channel regenerator is positioned in series with respect to other channel regenerators from said at least one set of channel regenerators, and

wherein the set of channels transmits signals from the transmitter to the receiver.

2. (previously presented): A multichannel wavelength-division multiplex fiber optic transmission system, comprising:

an optical transmitter; and

an optical receiver connected to the optical transmitter by an optical line, the line comprising:

at least one optical fiber, and

at least one set of channel regenerators,

wherein each one of the set of channel regenerators regenerates, by compensating for a distortion of a signal, only a predetermined respective group of channels, each respective group forming a non-overlapping subset of a set of channels to be regenerated, and each channel of the groups is predetermined based on channel wavelength,

wherein each channel regenerator is positioned at a predetermined distance on the optical line from other channel regenerators from said at least one set of channel regenerators, and

wherein the number of channel regenerators is a submultiple of the number of channels and wherein the distortion of the signal is compensated by reshaping, reamplifying, and retiming the signal.

3. (previously presented): The system claimed in claim 1 wherein each group includes only one channel.

4. (original): The system claimed in claim 3 wherein each regenerator is an optical regenerator.

5. (previously presented): The system claimed in claim 1 wherein at least one group includes a plurality of the channels.

6. (previously presented): The system claimed in claim 5, wherein the regenerator for the group having the plurality of channels comprises:

means for synchronizing the plurality of channels, and  
an optical regenerator unit performing the regenerating of the plurality of channels.

7. (previously presented): The system claimed in claim 4, wherein each channel regenerator comprises a synchronous modulator.

8. (previously presented): A multichannel wavelength-division multiplex fiber optic transmission system, comprising:

an optical transmitter; and

an optical receiver connected to the optical transmitter by an optical line, the line comprising:

at least one optical fiber, and

at least one set of channel regenerators,

wherein each one of the set of channel regenerators regenerates only a predetermined respective group of channels, each respective group forming a non-overlapping subset of a set of

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channels to be regenerated, and each channel of the groups is predetermined based on channel wavelength,

wherein each channel regenerator is positioned at a predetermined distance on the optical line from other channel regenerators from said at least one set of channel regenerators, and

wherein a channel regenerator comprises a demultiplexer and a multiplexer, wherein the respective predetermined group of channels is demultiplexed and regenerated by the channel regenerator and rest of the demultiplexed channels are not regenerated in the channel regenerator.

9. (previously presented): The system claimed in claim 1, wherein each channel regenerator comprises an inserter/extractor system for isolating channels to be regenerated.

10. (previously presented): A multichannel wavelength-division multiplex fiber optic transmission system, comprising:

an optical transmitter; and

an optical receiver connected to the optical transmitter by an optical line, the line comprising:

at least one optical fiber, and

at least one set of channel regenerators,

wherein each one of the set of channel regenerators regenerates, by compensating for a distortion of a signal, only a predetermined respective group of channels, each respective group

forming a non-overlapping subset of a set of channels to be regenerated, and each channel of the groups is predetermined based on channel wavelength,

wherein each channel regenerator is positioned at a predetermined distance on the optical line from other channel regenerators from said at least one set of channel regenerators, and

wherein each channel regenerator comprises a regeneration unit and a compensator amplifier compensating intensity differences between regenerated and non-regenerated channels.

11. (previously presented): The system as claimed in claim 1 further comprising supervisory means using a dedicated channel.

12. (previously presented): The system claimed in claim 11, wherein each channel regenerator comprises:

means for separating said dedicated channel from the other channels,

a supervisory unit for transmitting information relating to the status of said regenerator on said dedicated channel, and

means for remultiplexing said dedicated channel with the other channels.

13. (previously presented): The system claimed in claim 12, wherein:

each channel regenerator includes a regenerator unit for regenerating the channels of a group of channels, and

the supervisory unit receives information from said regenerator unit and a portion of the regenerated signal delivered by said regenerator unit.

14. (previously presented): The system as claimed in claim 1 further comprising:  
a plurality of spaced optical amplifiers, and  
a plurality of spaced optical regenerators forming said at least one set of channel regenerators,

wherein the spacing of said optical regenerators is a multiple of the spacing of said optical amplifiers.

15. (previously presented): The system as claimed in claim 3, wherein said each group includes only one channel regardless of a number of channels in the transmission system.

16. (previously presented): The system as claimed in claim 15, wherein a number of regenerators in said at least one set of channel regenerators depends at least partially on the number of channels in said transmission system.

17. (previously presented): The system as claimed in claim 16, wherein the set of channel regenerators successively regenerates the set of channels by having each one of the set of channel regenerators regenerate only the predetermined, respective group of channels, and wherein the set of channels to be regenerated is a plurality of channels regenerated by the set of channel regenerators.

18. (previously presented): The system as claimed in claim 17, wherein channels that are not regenerated in a regenerator of the set of channel regenerators, are amplified to compensate intensity difference between the channels not regenerated and the regenerated channels.

19. (previously presented): The system as claimed in claim 1, wherein the set of channel regenerators comprises a first channel regenerator and a plurality of other channel regenerators, and wherein each channel from the predetermined group of channels regenerated by the first channel regenerator is not regenerated by said plurality of other channel regenerators.

20. (currently amended): The system as claimed in claim 1, wherein each channels of said set of channel is regenerated by only one channel regenerator from a set of channel regenerators of said at least one set of channel regenerators, wherein each regenerator is an independent physical device separate from other channel regenerators in the set, and wherein said each channel regenerator of the set of channel regenerators are-is sequentially positioned on the optical line so as not to parallel the other channel regenerators in the set of channel regenerators.

21. (new): The system as claimed in claim 1, wherein channels that are not regenerated in a regenerator of the set of channel regenerators, are amplified to compensate intensity difference between the channels not regenerated and the regenerated channels.

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22. (new): The system as claimed in claim 1, wherein each of the channel regenerator of the set of channel regenerators is positioned parallel to at least one amplifier that amplifies channels that are not regenerated by said respective channel regenerator.

23. (new): The system as claimed in claim 1, wherein the set of channel regenerators are positioned on the same optical line.